UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/432,112	11/02/1999	TAKASHI TSUDA	837.1212/JDH	9637

21171 7590 04/25/2003

STAAS & HALSEY LLP
700 11TH STREET, NW
SUITE 500
WASHINGTON, DC 20001

EXAMINER
JUBA JR, JOHN

ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 04/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/432,112	TSUDA ET AL.	
	Examiner	Art Unit	
	John Juba	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 April 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,15,16,25-28,33-35,47,54,59 and 60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,15,16,25-28,33-35,47,54,59 and 60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Prosecution Re-Opened

Applicants' amendment under § 1.116, filed April 15, 2003 has been entered. Applicants' efforts to place this application in condition for allowance are noted with appreciation. An update search of the prior art developed additional references. Accordingly, the indication of claims 1 – 4, 15, 16, 25 – 28, 33 – 35, 47, 54, 59, and 60 as containing allowable subject matter is withdrawn, in light of the newly discovered prior art. The examiner regrets the delay in applying these references, and apologizes for any inconvenience.

Specification

The abstract of the disclosure is objected to because it is too long. The requirement has changed since Applicants' initial filing, and abstracts are now limited to 150 words in length. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 16, 47, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosaka, et al (U.S. Patent number 6,195,480; hereinafter, "Kosaka '480"), in view of Delavaux, et al. Referring *initially* to Figure 1 and the associated text, Kosaka '480 disclose a system for optical transmission adopting dispersion compensation, comprising

an optical fiber transmission line comprising a plurality of segments 7_n;

an optical transmitter (2_1) (5_1) for supplying an optical signal to said fiber transmission line;

an optical receiver (5_2) (4_2) for receiving said optical signal from the other end of said fiber transmission line;

an optical amplifier (6_n) between any two adjacent ones of said segments; and referring *for example* to Figure 4 and the associated text beginning in Column 8 (*esp.,* Col. 9, lines 30+),

a dispersion compensator (67_1) between a front-stage (63_1) and a rear-stage (68_1) amplifier of said optical receiver, there being

a plurality of O/E converters (23_n) connected to the output ports of a demultiplexer (75), which has its input port connected to said rear-stage amplifier.

The provision of amplifiers between fiber segments clearly conveys to the artisan that the segment lengths are limited in accordance with the available gain, the loss budget, and the noise budget. Thus, to one having ordinary skill in the art, Kosaka '480 fairly disclose segment lengths selected from a "predetermined" range, determined in

advance, whereby these parameters have values consonant with an operative channel. Thus, Kosaka '480 disclose the invention substantially as claimed. However, Kosaka '480 do not disclose the dispersion compensator as providing a dispersion selected from a plurality of stepwise varying dispersions determined in accordance with said predetermined range, as recited.

In the same field of endeavor, Delavaux, et al disclose an optical transmission system having a plurality of segments in the transmission line. Delavaux, et al disclose a dispersion compensator which may be disposed in the optical receiver (Col. 4, lines 58 – 65). Delavaux, et al teach that the dispersion compensator may provide a dispersion selected from a plurality of stepwise varying dispersions (see for example, Figs. 5 – 7, 9, and 10). In one example, the *steps* are related as 1:2:4:8 (Col. 3, line 50 – 56). Delavaux, et al clearly teach provision of compensation in steps which collectively suffice to compensate for dispersion encountered over the predetermined range of segment lengths.

It would have been obvious to one of ordinary skill to provide the dispersion compensator of Kosaka '480 in the form of a step-compensator, in the interest of permitting the dispersion amount to be varied, as suggested by Delavaux, et al. One of ordinary skill would have recognized the rather obvious advantage that adjustability provides in enabling a technician to optimize the network performance in the field.

Claims 1 – 4, 15, 16, 25 – 28, 33 – 35, 47, 54, 59, and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita, et al, in view of Delavaux, et al. [Although this reference is commonly assigned, Applicants cannot rely upon the provisions of § 103(c), because the instant application was not filed on or after November 29, 1999. Whereas a "CPA" would have been a new application entitled to such benefit, Applicants' "RCE" of February 5, 2002 did not give rise to a new application.] Referring *initially* to Figures 1A/B and the associated text, and considering transmission from the "west end" in Figure 1A toward the "east end" in Figure 1B, Kinoshita, et al disclose

a system for optical transmission adopting dispersion compensation, comprising

an optical fiber transmission line comprising a plurality of segments "SMF";

an optical transmitter ("NODE"/"WMUXA" in Fig. 1A) for supplying an optical signal to said fiber transmission line;

an optical receiver ("WMUXB"/"NODE" in Fig. 1B) for receiving said optical signal from the other end of said fiber transmission line;

an optical amplifier ("OPTICAL REPEATER") between any two adjacent ones of said segments "SMF"; and referring *for example* to Figure 8 and the associated text (*esp.*, Col. 9, lines 3–10 and Col. 13, lines 29),

a dispersion compensator ("DCM") between a front-stage (4-4) and a rear-stage (4-5) amplifier of said optical transmitter (Col. 14, lines 2-20), there being

a plurality of E/O converters (OSW_n) connected, via variable attenuators ($VATA_n$), to the input ports of a multiplexer ("TWMA") which has its output port connected to said front-stage amplifier.

At the receive (east) end, the system further comprises

a dispersion compensator ("DCM") between a front-stage (6-4) and a rear-stage (6-5) amplifier of said optical receiver (Col. 15, lines 50-60), there being

a plurality of O/E converters (ORE_n) connected to the output ports of a multiplexer ("RWDB") which has its input port connected to said rear-stage amplifier.

The provision of amplifiers between fiber segments clearly conveys to the artisan that the segment lengths are limited in accordance with the available gain, the loss budget, and the noise budget (see *e.g.*, Col. 8, line 55 – Col. 9, line 2). Thus, to one having ordinary skill in the art, Kinoshita, et al fairly disclose segment lengths selected from a "predetermined" range, determined in advance, whereby these parameters have values consonant with an operative channel. Thus, Kinoshita, et al disclose the invention substantially as claimed. However, Kinoshita, et al do not disclose the dispersion compensator as providing a dispersion selected from a plurality of stepwise varying dispersions determined in accordance with said predetermined range, as recited.

In the same field of endeavor, Delavaux, et al disclose an optical transmission system having a plurality of segments in the transmission line. Delavaux, et al disclose a dispersion compensator which may be disposed in the optical transmitter and/or the optical receiver(Col. 4, lines 58 – 65). Delavaux, et al teach that the dispersion

compensator may provide a dispersion selected from a plurality of stepwise varying dispersions (see for example, Figs. 5 – 7, 9, and 10). In one example, the *steps* are related as 1:2:4:8 (Col. 3, line 50 – 56). Delavaux, et al clearly teach provision of compensation in steps which collectively suffice to compensate for dispersion encountered over the predetermined range of segment lengths.

It would have been obvious to one of ordinary skill to provide the dispersion compensators of Kinoshita, et al in the form of step-compensators, in the interest of permitting the dispersion amount to be varied, as suggested by Delavaux, et al. One of ordinary skill would have recognized the rather obvious advantage that adjustability provides in enabling a technician to optimize the network performance in the field.

With regard to claims 2, 3, 26, 27, 34, 35, 59, and 60, Kinoshita, et al disclose operation at a center wavelength of about 1.55 μm in order to operate within the gain bandwidth of the erbium-doped fiber amplifiers used along the transmission line (Col. 1, lines 55-67), and clarify that the "SMF" discussed is a single mode fiber having a zero dispersion wavelength at about 1.3 μm, whereby dispersion is introduced by virtue of operation at the longer wavelength (Col. 2, lines 47-60).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kosaka, et al (U.S. Patent number 6,400,475) disclose a dispersion compensating unit in a transmitter/receiver terminal, and disclose a dispersion compensating unit between pre- and post-amplifiers of a repeater.

Nakano discloses a dispersion compensating unit between pre- and post-amplifiers of an optical repeater.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Juba whose telephone number is (703) 308-4812. The examiner can normally be reached on Mon.-Fri. 9 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on Mon.- Thu., 9 - 5. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JOHN JUBA
PRIMARY EXAMINER
Art Unit 2872

April 22, 2003